

# **Freedom and an Open Society– Road Blocks to Improving Aviation Safety in the U.S.A?**



**Stuart Matthews  
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**Third GAIN World Conference**

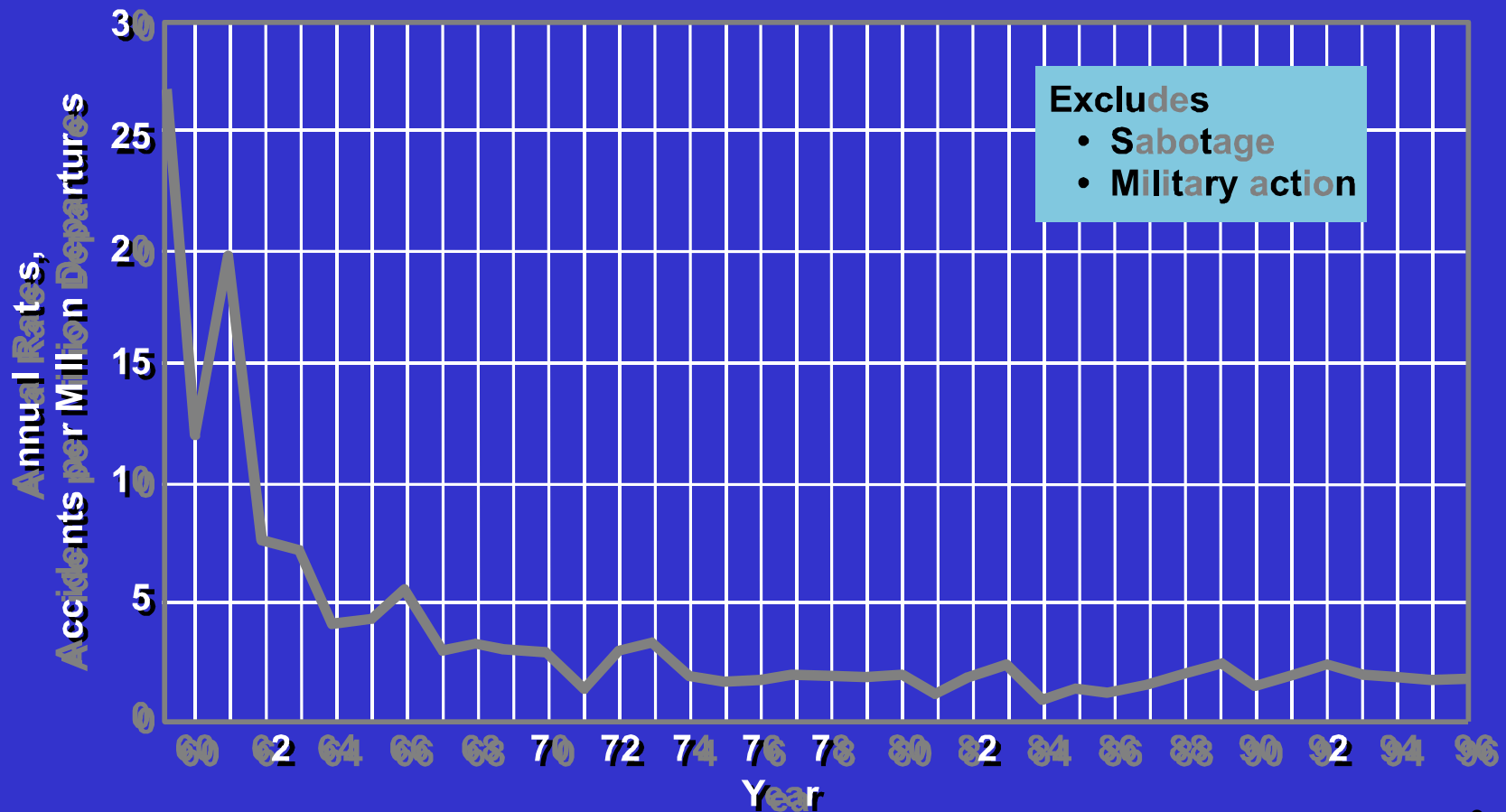
**Long Beach, California**

**November 3–5, 1998**



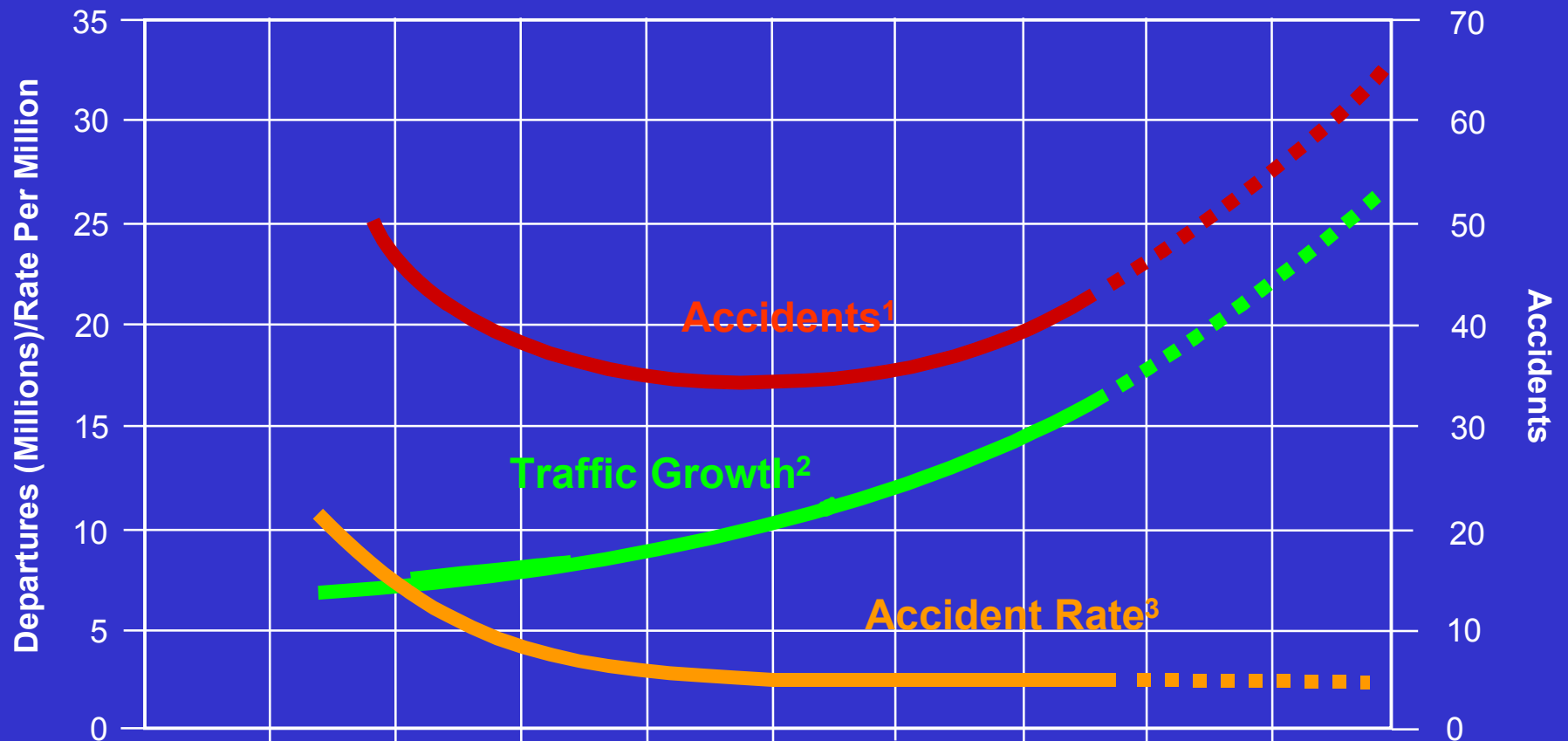
# Air Transport Is Already Safe

## Worldwide Commercial Jet Fleet





# Accidents Will Increase



<sup>1</sup>Based on current accident rate

<sup>2</sup>Based on industry estimate

<sup>3</sup>Based on current accident rate



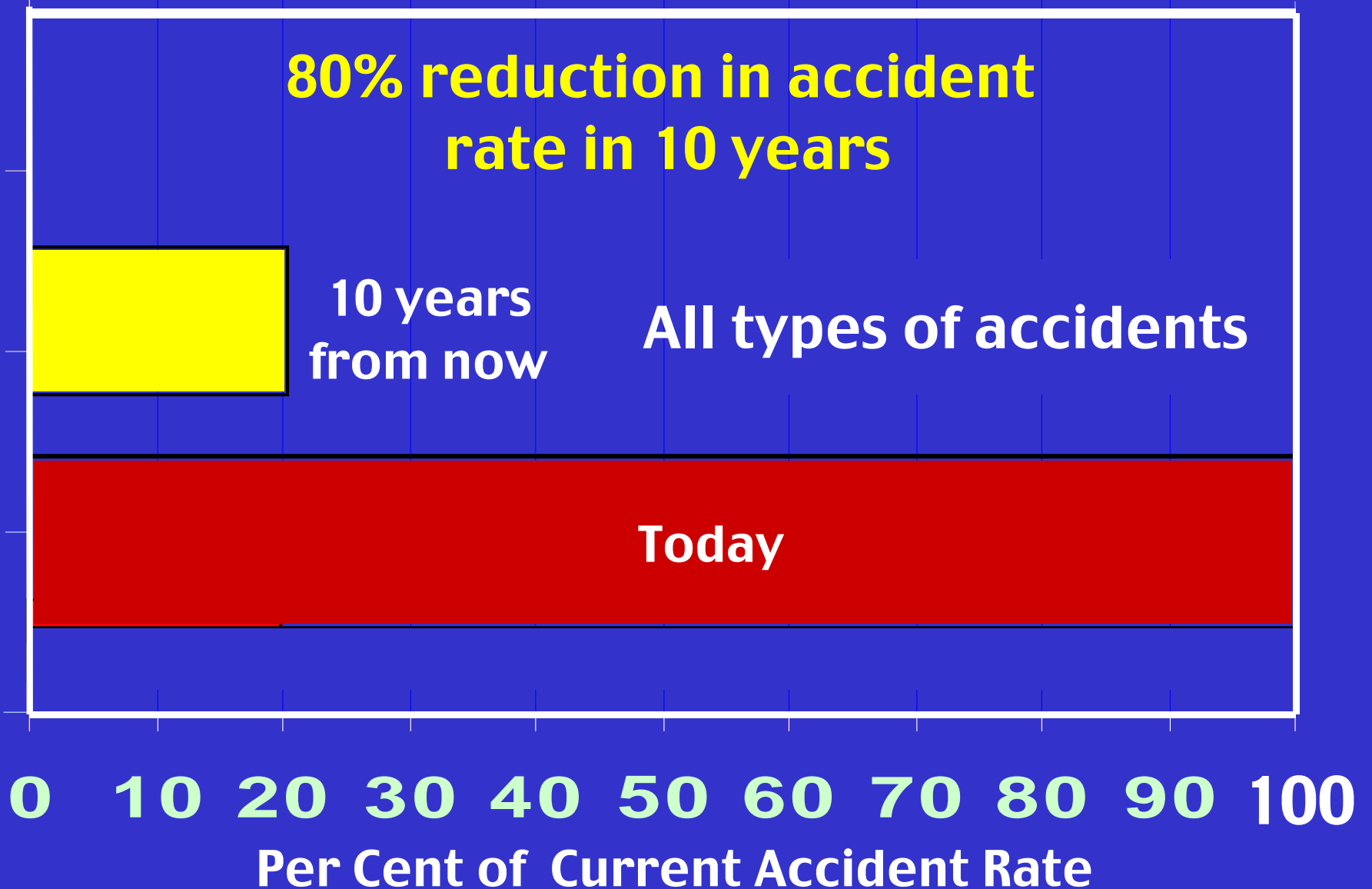
# Improving Aviation Safety

**National U.S. Goal:**

**Reduce accident rate by  
80% in 10 years**



# Achieving the National Goal





# Achieving the National Goal





# Human Factors

Human error contributes to some 85% of all accidents.

**People make mistakes!**

- Most errors are inadvertent
- People do not intend to commit errors

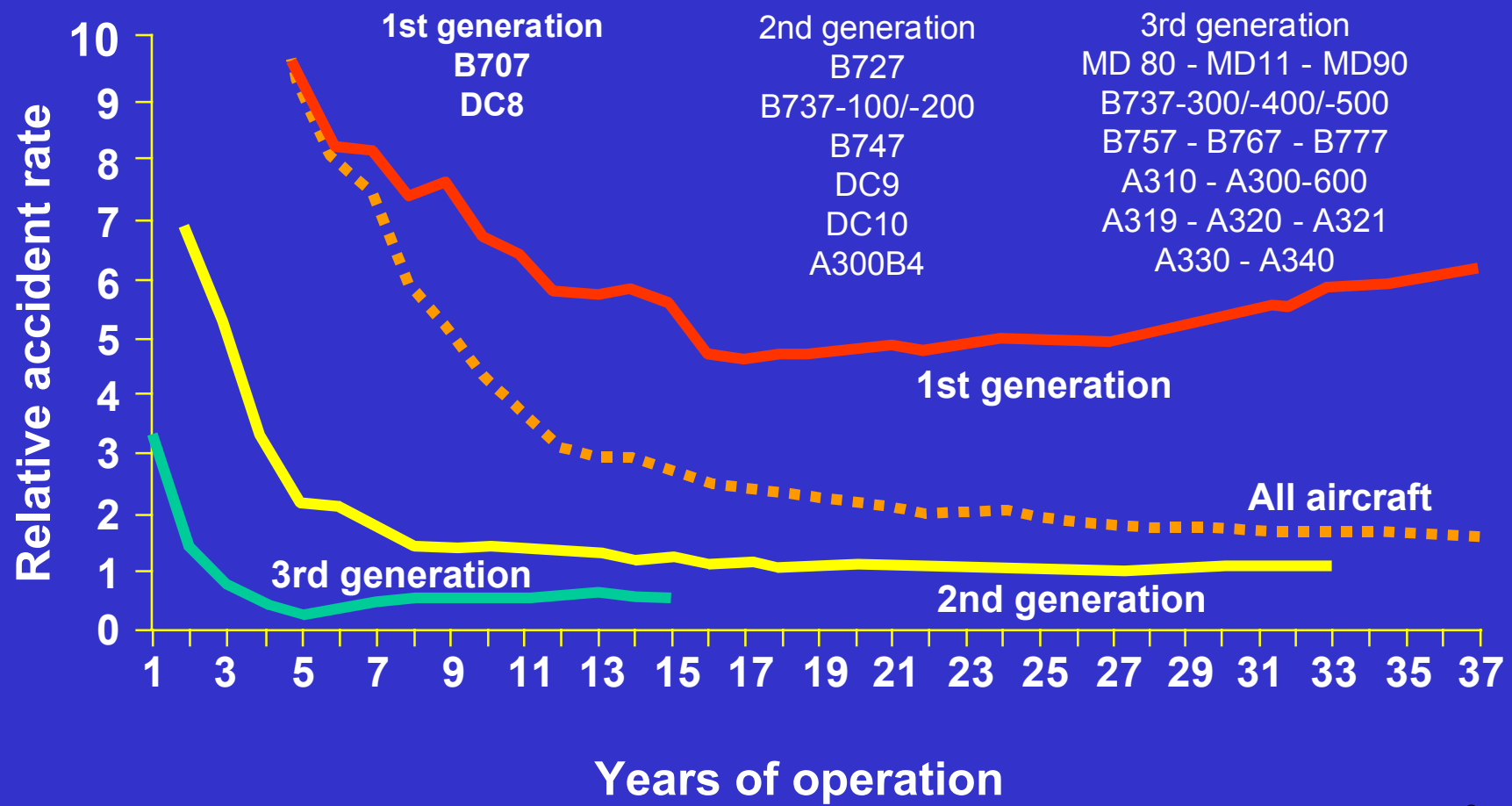
**Not just in aviation.**

**Any accident; any time; anywhere.**

**Inadvertent human error is quite normal behaviour**



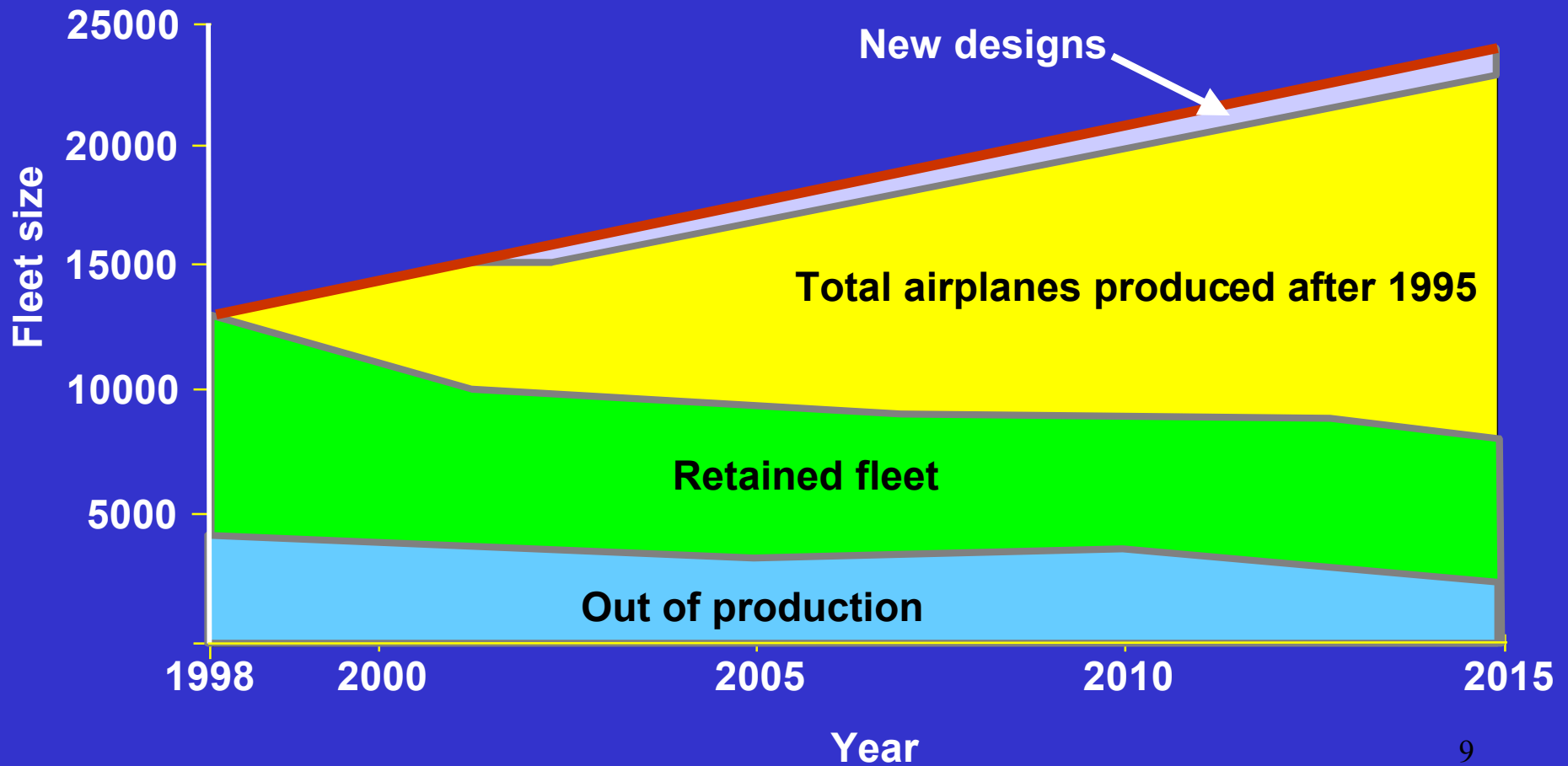
# Aircraft Safety Has Improved







# Existing Aircraft Will Still Be With Us For A Long Time





# **Aircraft Safety Improvements Will Be Incremental**

- Aircraft are already extremely safe
- No new types for a long time
- Existing aircraft types in service for many more years
- Incremental safety improvements only
  - Installation in new production aircraft
  - Retrofit to existing aircraft

**No quantum safety improvements are  
expected**



# Past Accident Improvements





# Past Accident Reduction

- Historically we have been **reactive**
  - Examination of accident wreckage
  - Analysis of “black box”
- This has produced a very low accident rate.
- The accident rate is now on a plateau.

**Reactive approach is no longer**  
**effective**



# Future Accident Reduction

- In the future we must be **pro-active**.
- Identify and eliminate adverse trends.
- Stop accidents before they happen.

**Analysis of flight data recorder information can help to do this.**



# Digital Flight Data Recorder

**DFDR is monitoring continuously:**

- **Aircraft**

- Systems
- Performance

- **Crew**

- Control
- Airmanship
- Exceedences
- Behavior



# Preventing Future Accidents

## Analysis of DFDR Information

- Identifies normal operations
- Highlights abnormal operations
- Detects adverse trends in normal operations

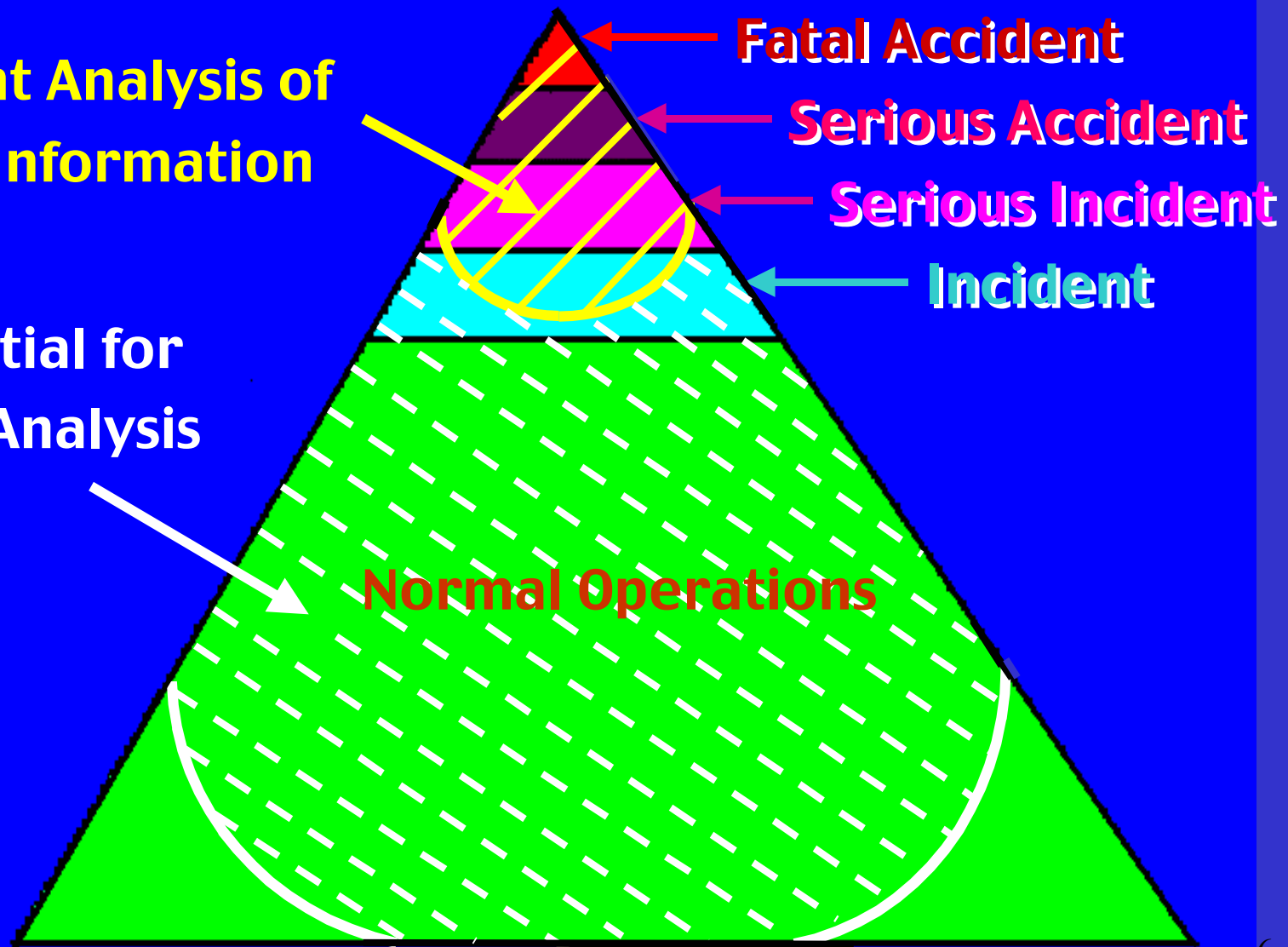
**Potential hazards can be identified and corrected before an accident occurs**



# Analysis of DFDR Information

**Current Analysis of  
DFDR Information**

**Potential for  
DFDR Analysis**







# FOQA Programs

(Flight Operations Quality Assurance)

- Analysis of the DFDR
  - tells you what was done
  - does not always say why
- Crew reports
  - tell you why

For best results DFDR monitoring  
and crew reports should be

**CONFIDENTIAL and NON-PUNITIVE**



# FOQA Programs

## Implementation:

- Inadvertent errors are not punished
- Inadvertent mistakes are treated as symptoms of a problem
- Symptoms are used to identify adverse trends and avert problems before they become serious



# FOQA Programs

## DFDR Analysis and Confidential Non-Punitive Reporting Systems

- Prevent accidents
- Reduce injuries
- Save lives
- Save equipment
- Reduce costs



# FOQA Programs

## Confidential and Non-Punitive Reporting Systems

**They work effectively in:**

- United Kingdom
- Scandinavia
- Australia
- France
- Japan
- Many other countries



# FOQA Programs

**If they're so good elsewhere,  
why not so in the U.S.A ?**

**We live in a  
punitive society !**



# **Punitive Culture**

**When things go wrong:**

- **Find out who was responsible**
- **Blame them**
- **Get compensation from them**
- **Punish them**

**Presumes that will fix  
the problem !**



# **Punitive Culture**

**A natural human trait**

**BUT**

**If people think they will be punished  
who will report mistakes as long  
as they think they can get  
away with them ?**



# FOQA Concerns

## Line personnel worry about:

- Loss of face among peers
- Punitive action by
  - management
  - regulator
  - civil authorities





# FOQA Concerns

## Management worries about:

- Punitive regulatory action
- Legal action
  - discovery



# FOQA Concerns

**Government/regulators  
worry about:**

- **FOIA**
  - media
  - lawyers
  - public



# **FOIA**

**(Freedom Of Information Act)**

**Designed to protect against:**

- **Secret government**
- **‘Big Brother’**

**Guards individual freedoms**



# **FOIA**

**Guards individual freedoms**

## **BUT**

**If government regulators  
must reveal all that they know  
upon request who will  
voluntarily provide regulators  
with sensitive information ?**



# Discovery

**The right of access to each others' documents, files or other material evidence by opposing parties in a civil law suit**

- Ensures availability of evidence
- Guards against concealment of evidence
- Ensures a fair hearing
- Assists due process

**Supports democracy and the rule of law**



# **Discovery**

**Supports democracy  
and the rule of law**

**BUT**

**If records can not be kept confidential  
who will retain sensitive information  
that might be used against them ?**



# **FOIA and Discovery**

**Bastions of Freedom and Democracy**

**BUT**

**Obstacles to Confidential,  
Non-Punitive Reporting**

**AND**

**Road blocks to improving  
aviation safety !**



# U.S. FOQA Programs

How can we implement them ?

- **Agreements among parties involved**
  - individuals/unions/managements/regulators
- **Policy Statements**
  - regulators
- **Amend the rules/regulations**
  - industry/regulators/justice
- **Change the law**
  - legislators (Congress)





# **U.S. FOQA Programs**

**Present systems rely upon:**

- ‘Trust’
- ‘Special’ letters

**These are vulnerable to:**

- Challenge
- Changing interpretation



# **FOQA Programs**

**Why do they work  
in other places ?**

**They have a different  
legal environment**



# **FOQA Programs**

**How can we make them work  
in the U.S.A ?**

**CHANGE THE LAW !**

**The best solution,  
but  
probably the most difficult**



# **Confidential, Non-Punitive Reporting**

**Unless the law is changed**

- agreements**
- policy statements**
- special regulations**

**will always be open to challenge  
and**

**discovery  
will remain a threat**



# Changing the Law

## Concept:

### Inadvertent errors or mistakes

- Revealed by operational trend monitoring, including DFDR analysis
- Voluntary reporting
- When identified as information to help improve safety

**will not be penalized**



# Inadvertent Errors

Are not the same as:

- repeated
  - willful
  - reckless
  - deliberate
  - intentional
  - criminal
- mistakes or acts

These will not be condoned



# **U.S. FOQA Programs**

**Confidential, non-punitive monitoring  
and voluntary reporting systems**

**Powerful tools to:**

- combat human error**
- reduce the accident rate**

**Let's change the law  
to make them work !**



# **Flight Safety Foundation**

**An International Organization for Everyone  
Concerned with the Safety of Flight**